1861MNRAS..22...44B

# *On the Elements of the Variable Star* R *Sagittæ.*
## By Joseph Baxendell, Esq.

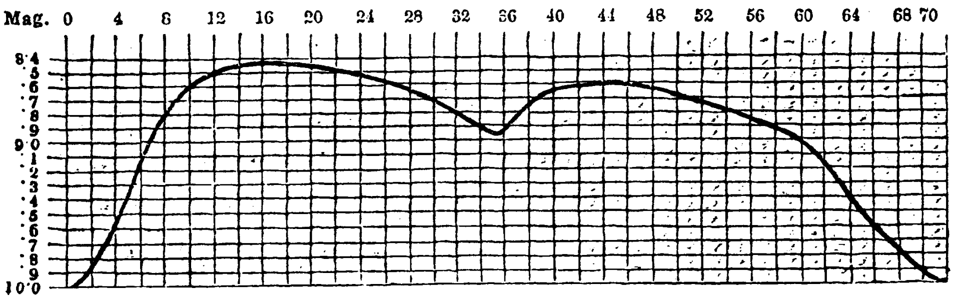
This star was discovered to be variable in October, 1859; and in a notice of it which I communicated to the Physical Section of the Manchester Literary and Philosophical Society, on the 5th January, 1860, its period was stated to be about 74 days, and its range of variation to be from the 9·8 magnitude at minimum to the 8·4 magnitude at maximum. The observations which I have since made have, however, enabled me to determine its elements with much greater accuracy than could be expected in a first approximation, and have also shown that it merits attention as being one of the very few but interesting variables, the light-curves whereof exhibit a distinctly marked *secondary* minimum. Many of the variables occasionally exhibit decided deviations from the ordinary course of their changes; but the cases are very rare in which a secondary minimum forms a permanent feature in the curves laid down from observations extending over several successive periods.

During the two years which have elapsed since I first noticed the variability of R *Sagittæ*, I have obtained the following determinations of the times of nine of its principal minima:—

1. 1859, Oct. 27
2. 1860, Jan. 7
3. „ May 31
4. „ Aug. 7
5. „ Oct. 19
6. 1860, Dec. 27
7. 1861, May 17
8. „ July 25
9. „ Oct. 8

Treating the equations formed from these data by the method of least squares, I find that the

Epoch = 1860, Oct. 17·13
Period = 70·88 days



Light-curve of R *Sagittæ*. Period = 70·88 days.

Downloaded from http://mnras.oxfordjournals.org/ at Northern Arizona University on June 1, 2015

© Royal Astronomical Society • Provided by the NASA Astrophysics Data System

1861MNRAS..22...44B

Calculating the times of the minima by means of these elements, and comparing the calculated with the observed results, we have

|  | C – O. |  | C – O. |
|---|---|---|---|
|  | days. |  | days. |
| 1. | + 1·73 | 6. | + 0·01 |
| 2. | + 0·61 | 7. | + 0·77 |
| 3. | – 2·63 | 8. | + 2·65 |
| 4. | + 0·25 | 9. | – 1·47 |
| 5. | – 1·87 |  |  |

These differences show that the variations in the length of the period of R *Sagittæ* are confined within moderate limits, and that this star may be ranked in the class of moderately regular variables.

Using the mean period of 70·88 days in combining all the observations made in the different phases of the star's changes, and projecting the mean results in the usual way, I find, from the curve thus obtained, that the principal maximum, the secondary minimum, and the secondary maximum, follow the principal minimum in 17, 35, and 44 days respectively. It appears, therefore, that the interval between the principal and the secondary minimum is almost exactly one-half of the whole period, precisely as in the case of the well-known double-period variable, β *Lyræ*.

The mean magnitude at the principal minimum = 10·00
,, maximum = 8·45
secondary minimum = 8·95
,, maximum = 8·60

The lowest minimum yet observed is 10·3, and the highest maximum 8·3; the greatest range of variation is, therefore, 2·0 magnitudes.

The mean place of the star for 1860·0 is

R.A. $20^h\ 7^m\ 40^s$; Decl. 16° 18′·3 N.

*Manchester, Dec.* 9, 1861.

---

## *On the Variable Star* R *Vulpeculæ.* By G. Knott, Esq.

R *Vulpeculæ*. Piazzi xx. 457. My earliest observations of this variable were made on the 7th, 9th, and 10th of September, when it shone as a star of the 9·3 magnitude. Bad weather and absence from home prevented another observation till the 26th of the month, when, to my surprise, I found it considerably fainter, and of the 11·7 magnitude. Since that date I have

B

© Royal Astronomical Society • Provided by the NASA Astrophysics Data System